

On stability of the Kasner solution in quadratic gravity

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Abstract

© 2016, Springer Science+Business Media New York. We consider the dynamics of a flat anisotropic Universe filled by a perfect fluid near a cosmological singularity in quadratic gravity. Two possible regimes are described—the Kasner anisotropic solution and an isotropic “vacuum radiation” solution which has three sub cases depending on whether the equation of state parameter w is bigger, smaller or equals to $1/3$. Initial conditions for numerical integrations have been chosen near a General Relativity anisotropic solution with matter (Jacobs solution). We have found that for such initial conditions there is a range of values of the coupling constants so that the resulting cosmological singularity is isotropic.

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Keywords

Homogeneous solutions, Numerical solutions, Quadratic gravity

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